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## PATENT ABSTRACTS OF JAPAN

(11)Publication number : 08-161134

(43)Date of publication of application : 21.06.1996

(51)Int.Cl.

G06F 3/12  
B41J 29/38

(21)Application number : 06-300926

(71)Applicant : CANON INC

(22)Date of filing : 05.12.1994

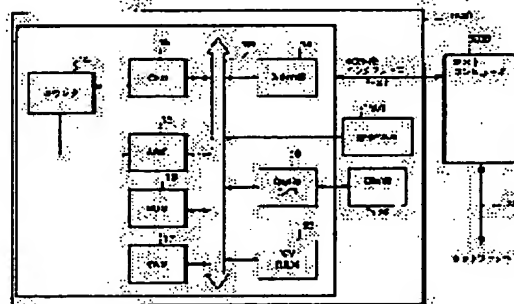
(72)Inventor : YAGI MASAYA

## (54) PRINTER AND ITS MAINTENANCE METHOD

## (57)Abstract:

PURPOSE: To provide a printer enabling a service man to know the maintenance period of the printer and the contents of maintenance without user's intervention and to provide the maintenance method.

CONSTITUTION: Maintenance information for a printer 1500 is inputted from an operation panel 1501 and stored in an NVRAM 20, and when a counter 14 counts up a prescribed number of sheets printed out by a printing part 222, an ASIC 15 outputs the maintenance information stored in the NVRAM 20 from an I/O part 18 to a host computer 3000 through a bidirectional interface 21. Then the computer 3000 transmits the maintenance information to a service center on a network.



## LEGAL STATUS

[Date of request for examination]

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's decision of rejection]

[Date of requesting appeal against examiner's decision of rejection]

[Date of extinction of right]

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[JP,08-161134,A]

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**CLAIMS**

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**[Claim(s)]**

[Claim 1] The printer carry out having a storage means memorize the maintenance information on a printer, a specific means specify the timing which outputs the maintenance information memorized by the aforementioned storage means, and an output means output the maintenance information memorized by the aforementioned storage means according to the timing specified by the aforementioned specific means as the feature.

[Claim 2] counting to which the aforementioned specific means carries out counting of the printing number of sheets -- the printer according to claim 1 characterized by specifying as timing which outputs maintenance information if a means reaches fixed number of sheets

[Claim 3] The aforementioned maintenance information is a printer according to claim 1 characterized by being information required for the maintenance inputted from the control panel.

[Claim 4] The aforementioned output means is a printer according to claim 1 characterized by outputting maintenance information to the external instrument connected to the network.

[Claim 5] The maintenance method of the printer characterized by having each process which outputs the maintenance information which specified the timing which memorizes the maintenance information on a printer and outputs the memorized maintenance information, and was memorized according to the specified timing.

[Claim 6] counting to which the aforementioned specific process carries out counting of the printing number of sheets -- the maintenance method of the printer according to claim 5 characterized by specifying as timing which outputs maintenance information if a means reaches fixed number of sheets

[Claim 7] The aforementioned maintenance information is the maintenance method of the printer according to claim 5 characterized by being information required for the maintenance inputted from the control panel.

[Claim 8] The aforementioned output process is the maintenance method of the printer according to claim 5 characterized by outputting maintenance information to the external instrument connected to the network.

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**DETAILED DESCRIPTION**

---

**[Detailed Description of the Invention]**

[0001]

[Industrial Application] this invention relates to a printer and its maintenance methods, such as a printer connected to a network especially through a bidirection interface.

[0002]

[Description of the Prior Art] Although the print data sent from two or more external instruments in the bottom of a network environment can be conventionally printed with image formation equipments, such as a printer, a user usually connects with a service pin center, large, and a maintenance is requested, or a serviceman visits a user periodically, and the maintenance is exchanging the parts exhausted by the check of printing number of sheets, and eye measurement with the counter of a printer.

[0003]

[Problem(s) to be Solved by the Invention] However, after the user used the request of a periodic check as the service pin center, large, or choosing the stage at one's own discretion himself, and requesting the maintenance by telephone etc. or a toner piece and the life of internal parts coming by the above-mentioned maintenance method, there was a problem that a method only had requesting repair etc.

[0004] It did not accomplish, in order that this invention might solve an above-mentioned technical problem, and it aims at offering the printer to which a serviceman can know the maintenance stage and the content of a maintenance of a printer, without through a user, and its maintenance method.

[0005]

[The means which invention is going to solve] In order to attain the above-mentioned purpose, the printer of this invention is equipped with the composition shown below.

[0006] That is, it has a storage means to memorize the maintenance information on a printer, a specific means to specify the timing which outputs the maintenance information memorized by the aforementioned storage means, and an output means to output the maintenance information memorized by the aforementioned storage means according to the timing specified by the aforementioned specific means.

[0007] Moreover, in order to attain the above-mentioned purpose, the maintenance method of the printer by this invention has the following processes.

[0008] That is, it has each process which outputs the maintenance information which specified the timing which memorizes the maintenance information on a printer and outputs the memorized maintenance information, and was memorized according to the specified timing.

[0009]

[Function] In the above-mentioned composition, it operates so that the maintenance information which specified the timing which memorizes the maintenance information on a printer and outputs the memorized maintenance information, and was memorized according to the specified timing may be outputted.

[0010]

[Example] Hereafter, one suitable example concerning this invention is explained in detail, referring to a drawing.

[0011] In advance of explanation, it explains first, referring to drawing 1 - drawing 3 about the composition of a suitable laser beam printer to apply this invention and an ink jet printer.

[0012] In addition, although the following explanation explains a laser beam printer and an ink jet printer to an example, this invention is not restricted to these and it cannot be overemphasized that the printer of other print methods may be used.

[0013] Drawing 1 is the outline cross section showing the composition of the printer which can apply this invention, for example, is drawing showing the case of a laser beam printer (LBP).

[0014] In drawing, 1500 is a LBP main part, while it inputs and memorizes printed information (character code etc.), form information, or macro instruction supplied from the host computer connected

outside, creates a character pattern, a form pattern, etc. which correspond according to those information, and forms an image in the recording paper which is a record medium.

[0015] 1501 is the control-panel section and a switch, a Light Emitting Diode drop, etc. for operation are arranged. 1000 is a control unit which controls the LBP main part 1500. Mainly, alphabetic information is changed into the video signal of a corresponding character pattern, and this control unit 1000 outputs it to the laser driver 1502. The laser driver 1502 changes the laser beam 1504 discharged from semiconductor laser 1503 on-off. A laser beam 1504 will be shaken at a longitudinal direction by the rotating polygon 1505, and the electrostatic latent image of a character pattern will be formed on the electrostatic drum 1506. After this electrostatic latent image is developed by the development unit 1507 arranged by the electrostatic drum 1506 circumference, it is imprinted by the recording paper. A cut sheet is used for this recording paper, and a cut sheet is contained by the form cassette 1508 with which the LBP main part 1500 was equipped, with the feed roller 1509 and the conveyance roller 1510, and the conveyance roller 1511, it is incorporated in equipment and supplied to the electrostatic drum 1506. Moreover, the LBP main part 1500 is equipped with at least one or more card slots which are not illustrated, and it is constituted so that an option font card and the control card (emulation card) from which a language system differs can be connected in addition to a built-in font.

[0016] Drawing 2 is the external view showing the composition of another printer which can apply this invention, for example, is drawing showing the case of an ink-jet recording device (IJRA).

[0017] The right inverse rotation of a drive motor 5013 is interlocked with, the \*\* carriage HC together put a system to the leading-screw 5005 spiral slot 5004 rotated through the driving force transfer gears 5011 and 5009 has a pin (not shown), and both-way movement is carried out in Arrow a and the direction of b so that it may illustrate. The ink-jet carriage IJC is carried in this carriage HC. 5002 is a paper presser-foot board and presses paper to a platen 5000 over the carriage move direction. 5007 and 5008 are photo couplers, check whether the lever 5006 of carriage exists in this region, and function as a home-position detection means for performing the change of the hand of cut of a motor 5013 etc. 5016 -- the whole surface of a recording head -- a cap -- the member which supports a member 5022, and 5015 perform suction recovery of a recording head through the opening 5023 in a cap with a suction means to attract the inside of this cap 5017 is a cleaning blade and becomes movable to a cross direction by the member 5019. 5018 is a main part support plate and supports the above 5017 and 5019. 5012 is a lever for starting suction of suction recovery, it moves with movement of the cam 5020 which engages with carriage, and move control of the driving force is carried out with well-known means of communication, such as a clutch change, from a drive motor.

[0018] What is necessary is just to constitute these capping, cleaning, and suction recovery so that request operation may be performed to well-known timing although it is constituted so that a request can be processed by operation of a leading screw 5005 in those correspondence positions when it comes to a carriage home-position side field.

[0019] Drawing 3 is the outline block diagram showing the control composition of the printer shown in drawing 2.

[0020] In drawing, 1700 is an interface and inputs the record signal from the outside. 1701 is MPU and controls the whole printer. 1702 is ROM and stores a control program, host printed information, etc. which MPU1701 performs. 1703 is DRAM and saves various data (record data supplied to the above-mentioned record signal or a head). 1704 is a gate array (GA) and also performs supply control of the output data to a recording head 1708, and an interface 1700 and the data transfer control between MPU1701 and DRAM1703.

[0021] As for the head driver for a drive of a recording head 1708, and 1706, the conveyance motor for the carrier motor for 1710 conveying a recording head 1708 and 1709 conveying a record form and 1705 are [ the motor driver for a drive of the conveyance motor 1709 and 1707 ] the motor drivers for a drive of the carrier motor 1710.

[0022] In the above composition, if input is inputted from the host computer later mentioned through an interface 1700, while input will be changed into the print-out for a print between a gate array 1704 and MPU1701 and the motor drivers 1706 and 1707 will drive, a recording head 1708 drives according to the print-out sent to the head driver 1705, and printing is performed.

[0023] In addition, communications processing with the host computer later mentioned through an interface 1700 is possible for MPU1701, it is constituted by the host computer possible [ communication ] and every device on a network constitutes the host printed information in memory information, resources data, etc. about DRAM1703, and ROM1702 possible [ communication ] at it.

[0024] Drawing 4 is the outline block diagram showing the composition of the printer control system which shows this example. Here, a laser beam printer ( drawing 1 ) is explained to an example. In addition, if the function of this invention is performed, even if it is the system by which processing is

performed through networks, such as LAN, even if it is the system which consists of two or more devices even if it is the device of a simple substance, it cannot be overemphasized that this invention is applicable. [0025] In drawing, 3000 is a host computer, it has CPU1 which processes the document with which the figure, the image, the character, the table, etc. were intermingled based on the document processing system program memorized by ROM for a program of ROM3, and CPU1 controls in generalization two or more devices connected to the system device 12. Moreover, the control program of CPU1 etc. is memorized by ROM for a program of this ROM3, the font data used for ROM for fonts of ROM3 in the case of a document processing system is memorized, and the various data used in case the above-mentioned document processing system etc. is further performed to ROM for data of ROM3 are memorized.

[0026] 2 is RAM and functions as a work area which the main memory of a host computer 3000 and CPU1 use. 4 is a network controller and controls communication with a network through the predetermined bidirection interface (I/F) 24. 5 is a keyboard controller (KBC) and controls the input from a keyboard (KB) 9 or a non-illustrated pointing device. 6 is a CRT controller (CRTC) and controls the display of CRT display (CRT) 10. 7 is a disk controller (DKC) and controls access with external memory 11, such as a hard disk (HD) which memorizes a boot program, various applications, font data, a user file, an edit file, etc., or a floppy disk (FD). 8 is a printer controller (PRTC), and it connects with a printer 1500 through the predetermined bidirection interface (I/F) 21, and it performs communications control processing with a printer 1500.

[0027] Moreover, CPU1 performs expansion processing of the outline font to the display information RAM set up for example, on RAM2, and makes WYSIWYG on CRT10 possible. Furthermore, CPU1 opens the various windows registered based on the command directed by the mouse cursor which is not illustrated on CRT10, and performs various data processing.

[0028] Drawing 5 is the outline block diagram showing the control composition of the printer 1500 in this example.

[0029] In drawing, 13 is CPU, controls in generalization access with the various devices connected to the system bus 23 based on the control program memorized by ROM16, and outputs the picture signal as a print-out to the printing section 22 connected through the printing section interface 19. Moreover, not only the program ROM that has memorized the control program of CPU13 etc. but ROM for fonts which has memorized the font data used in case a print-out is generated is included in this ROM16. The external instrument and communications processing on a network are constituted possible through the I/O section 18, and CPU13 is constituted by the host computer 3000 grade possible [ a notice ] in the information in a printer etc. 17 is RAM which functions as the main memory of CPU12, a work area, etc., and it is constituted so that the capacity of memory can be extended by the option RAM connected to the extension port which is not illustrated. Moreover, RAM17 is used for a print-out expansion field, an environmental data storage field, etc.

[0030] 1501 is the control panel mentioned above and a switch, a Light Emitting Diode drop, etc. for operation are arranged. From this control panel 1501, information required for maintenances, such as ID-No. of a printer, a user name, the address, a model name, and an output place device, can be inputted. This input data is memorized by NVRAM20. A counter 14 counts the printed number of sheets, and counts up by the printing instruction from CPU13. ASIC15 will transmit maintenance information data to the host computer 3000 on a network through the bidirectional interface 21 through the I/O section 18 from NVRAM20, if the counted value of a counter 14 reaches fixed number of sheets. On the other hand, the host computer 3000 which received the maintenance information transmits and outputs to the specified printer which is not automatically illustrated on a network through the bidirectional interface 24 by making the received maintenance information data into output data.

[0031] Next, the printer in this example explains below according to the flow chart which shows the processing which transmits maintenance information automatically periodically to drawing 6.

[0032] First, in Step S1, while inputting the maintenance information mentioned above from the control panel 1501, the data is memorized to NVRAM20. In the following step S2, if a printer 1500 does one-sheet printing work, the counted value "C" of a counter 14 will be counted up in continuing Step S3.

[0033] Next, in step S4, it verifies whether counted value "C" reached fixed number of sheets, if fixed number of sheets is not reached, it returns to Step S2, and above-mentioned printing processing is repeated. Moreover, in step S4, if fixed number of sheets is reached, while progressing to Step S5 and making a counter 14 "0" clear, maintenance information is outputted to a host computer 3000 through the bidirection interface 21 from the I/O section 18.

[0034] Thus, in the constituted printer control system, memory, a printing number of sheets counter, etc. which store the maintenance information which shows the internal state of a printer are provided, and it has composition which can output the internal information data to an external instrument through an interface.

[0035] In addition, even if it applies this invention to the system which consists of two or more devices, you may apply it to the equipment which consists of one device. Moreover, it cannot be overemphasized that it can apply when attained by supplying a program to a system or equipment.

[0036]

[Effect of the Invention] As explained above, according to this invention, the printer under a network environment can know the maintenance stage and the content of a maintenance of the printer in the service pin center, large by transmitting maintenance information to an appointed printer, an appointed control unit, etc. automatically, without through a user.

[0037]

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[Translation done.]



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[0003]

[Problem(s) to be Solved by the Invention] However, after the user used the request of a periodic check as the service pin center, large, or choosing the stage at one's own discretion himself, and requesting the maintenance by telephone etc. or a toner piece and the life of internal parts coming by the above-mentioned maintenance method, there was a problem that a method only had requesting repair etc.

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[The means which invention is going to solve] In order to attain the above-mentioned purpose, the printer of this invention is equipped with the composition shown below.

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[0007] Moreover, in order to attain the above-mentioned purpose, the maintenance method of the printer by this invention has the following processes.

[0008] That is, it has each process which outputs the maintenance information which specified the timing which memorizes the maintenance information on a printer and outputs the memorized maintenance information, and was memorized according to the specified timing.

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[Function] In the above-mentioned composition, it operates so that the maintenance information which specified the timing which memorizes the maintenance information on a printer and outputs the memorized maintenance information, and was memorized according to the specified timing may be outputted.

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[Example] Hereafter, one suitable example concerning this invention is explained in detail, referring to a drawing.

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[0015] 1501 is the control-panel section and a switch, a Light Emitting Diode drop, etc. for operation are arranged. 1000 is a control unit which controls the LBP main part 1500. Mainly, alphabetic information is changed into the video signal of a corresponding character pattern, and this control unit 1000 outputs it to the laser driver 1502. The laser driver 1502 changes the laser beam 1504 discharged from semiconductor laser 1503 on-off. A laser beam 1504 will be shaken at a longitudinal direction by the rotating polygon 1505, and the electrostatic latent image of a character pattern will be formed on the electrostatic drum 1506. After this electrostatic latent image is developed by the development unit 1507 arranged by the electrostatic drum 1506 circumference, it is imprinted by the recording paper. A cut sheet is used for this recording paper, and a cut sheet is contained by the form cassette 1508 with which the LBP main part 1500 was equipped, with the feed roller 1509 and the conveyance roller 1510, and the conveyance roller 1511, it is incorporated in equipment and supplied to the electrostatic drum 1506. Moreover, the LBP main part 1500 is equipped with at least one or more card slots which are not illustrated, and it is constituted so that an option font card and the control card (emulation card) from which a language system differs can be connected in addition to a built-in font.

[0016] Drawing 2 is the external view showing the composition of another printer which can apply this invention, for example, is drawing showing the case of an ink-jet recording device (IJRA).

[0017] The right inverse rotation of a drive motor 5013 is interlocked with, the \*\* carriage HC together put a system to the leading-screw 5005 spiral slot 5004 rotated through the driving force transfer gears 5011 and 5009 has a pin (not shown), and both-way movement is carried out in Arrow a and the direction of b so that it may illustrate. The ink-jet carriage IJC is carried in this carriage HC. 5002 is a paper presser-foot board and presses paper to a platen 5000 over the carriage move direction. 5007 and 5008 are photo couplers, check whether the lever 5006 of carriage exists in this region, and function as a home-position detection means for performing the change of the hand of cut of a motor 5013 etc. 5016 -- the whole surface of a recording head -- a cap -- the member which supports a member 5022, and 5015 perform suction recovery of a recording head through the opening 5023 in a cap with a suction means to attract the inside of this cap 5017 is a cleaning blade and becomes movable to a cross direction by the member 5019. 5018 is a main part support plate and supports the above 5017 and 5019. 5012 is a lever for starting suction of suction recovery, it moves with movement of the cam 5020 which engages with carriage, and move control of the driving force is carried out with well-known means of communication, such as a clutch change, from a drive motor.

[0018] What is necessary is just to constitute these capping, cleaning, and suction recovery so that request operation may be performed to well-known timing although it is constituted so that a request can be processed by operation of a leading screw 5005 in those correspondence positions when it comes to a carriage home-position side field.

[0019] Drawing 3 is the outline block diagram showing the control composition of the printer shown in drawing 2.

[0020] In drawing, 1700 is an interface and inputs the record signal from the outside. 1701 is MPU and controls the whole printer. 1702 is ROM and stores a control program, host printed information, etc. which MPU1701 performs. 1703 is DRAM and saves various data (record data supplied to the above-mentioned record signal or a head). 1704 is a gate array (GA) and also performs supply control of the output data to a recording head 1708, and an interface 1700 and the data transfer control between MPU1701 and DRAM1703.

[0021] As for the head driver for a drive of a recording head 1708, and 1706, the conveyance motor for the carrier motor for 1710 conveying a recording head 1708 and 1709 conveying a record form and 1705 are [ the motor driver for a drive of the conveyance motor 1709 and 1707 ] the motor drivers for a drive of the carrier motor 1710.

[0022] In the above composition, if input is inputted from the host computer later mentioned through an interface 1700, while input will be changed into the print-out for a print between a gate array 1704 and MPU1701 and the motor drivers 1706 and 1707 will drive, a recording head 1708 drives according to the print-out sent to the head driver 1705, and printing is performed.

[0023] In addition, communications processing with the host computer later mentioned through an interface 1700 is possible for MPU1701, it is constituted by the host computer possible [ communication ] and every device on a network constitutes the host printed information in memory information, resources data, etc. about DRAM1703, and ROM1702 possible [ communication ] at it.

[0024] Drawing 4 is the outline block diagram showing the composition of the printer control system which shows this example. Here, a laser beam printer ( drawing 1 ) is explained to an example. In addition, if the function of this invention is performed, even if it is the system by which processing is

performed through networks, such as LAN, even if it is the system which consists of two or more devices even if it is the device of a simple substance, it cannot be overemphasized that this invention is applicable. [0025] In drawing, 3000 is a host computer, it has CPU1 which processes the document with which the figure, the image, the character, the table, etc. were intermingled based on the document processing system program memorized by ROM for a program of ROM3, and CPU1 controls in generalization two or more devices connected to the system device 12. Moreover, the control program of CPU1 etc. is memorized by ROM for a program of this ROM3, the font data used for ROM for fonts of ROM3 in the case of a document processing system is memorized, and the various data used in case the above-mentioned document processing system etc. is further performed to ROM for data of ROM3 are memorized.

[0026] 2 is RAM and functions as a work area which the main memory of a host computer 3000 and CPU1 use. 4 is a network controller and controls communication with a network through the predetermined bidirection interface (I/F) 24. 5 is a keyboard controller (KBC) and controls the input from a keyboard (KB) 9 or a non-illustrated pointing device. 6 is a CRT controller (CRTC) and controls the display of CRT display (CRT) 10. 7 is a disk controller (DKC) and controls access with external memory 11, such as a hard disk (HD) which memorizes a boot program, various applications, font data, a user file, an edit file, etc., or a floppy disk (FD). 8 is a printer controller (PRTC), and it connects with a printer 1500 through the predetermined bidirection interface (I/F) 21, and it performs communications control processing with a printer 1500.

[0027] Moreover, CPU1 performs expansion processing of the outline font to the display information RAM set up for example, on RAM2, and makes WYSIWYG on CRT10 possible. Furthermore, CPU1 opens the various windows registered based on the command directed by the mouse cursor which is not illustrated on CRT10, and performs various data processing.

[0028] Drawing 5 is the outline block diagram showing the control composition of the printer 1500 in this example.

[0029] In drawing, 13 is CPU, controls in generalization access with the various devices connected to the system bus 23 based on the control program memorized by ROM16, and outputs the picture signal as a print-out to the printing section 22 connected through the printing section interface 19. Moreover, not only the program ROM that has memorized the control program of CPU13 etc. but ROM for fonts which has memorized the font data used in case a print-out is generated is included in this ROM16. The external instrument and communications processing on a network are constituted possible through the I/O section 18, and CPU13 is constituted by the host computer 3000 grade possible [ a notice ] in the information in a printer etc. 17 is RAM which functions as the main memory of CPU12, a work area, etc., and it is constituted so that the capacity of memory can be extended by the option RAM connected to the extension port which is not illustrated. Moreover, RAM17 is used for a print-out expansion field, an environmental data storage field, etc.

[0030] 1501 is the control panel mentioned above and a switch, a Light Emitting Diode drop, etc. for operation are arranged. From this control panel 1501, information required for maintenances, such as ID-No. of a printer, a user name, the address, a model name, and an output place device, can be inputted. This input data is memorized by NVRAM20. A counter 14 counts the printed number of sheets, and counts up by the printing instruction from CPU13. ASIC15 will transmit maintenance information data to the host computer 3000 on a network through the bidirectional interface 21 through the I/O section 18 from NVRAM20, if the counted value of a counter 14 reaches fixed number of sheets. On the other hand, the host computer 3000 which received the maintenance information transmits and outputs to the specified printer which is not automatically illustrated on a network through the bidirectional interface 24 by making the received maintenance information data into output data.

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[0034] Thus, in the constituted printer control system, memory, a printing number-of-sheets counter, etc. which store the maintenance information which shows the internal state of a printer are provided, and it has composition which can output the internal information data to an external instrument through an interface.

[0035] In addition, even if it applies this invention to the system which consists of two or more devices, you may apply it to the equipment which consists of one device. Moreover, it cannot be overemphasized that it can apply when attained by supplying a program to a system or equipment.

[0036]

[Effect of the Invention] As explained above, according to this invention, the printer under a network environment can know the maintenance stage and the content of a maintenance of the printer in the service pin center, large by transmitting maintenance information to an appointed printer, an appointed control unit, etc. automatically, without through a user.

[0037]

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[Translation done.]



(19)日本国特許庁 (J P)

(12) 公 開 特 許 公 報 (A)

(11)特許出願公開番号

特開平8-161134

(43)公開日 平成8年(1996)6月21日

(51)Int.Cl.<sup>6</sup>

識別記号

庁内整理番号

F I

技術表示箇所

G 0 6 F 3/12

K

A

B 4 1 J 29/38

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審査請求 未請求 請求項の数8 O L (全 7 頁)

(21)出願番号

特願平6-300926

(22)出願日

平成6年(1994)12月5日

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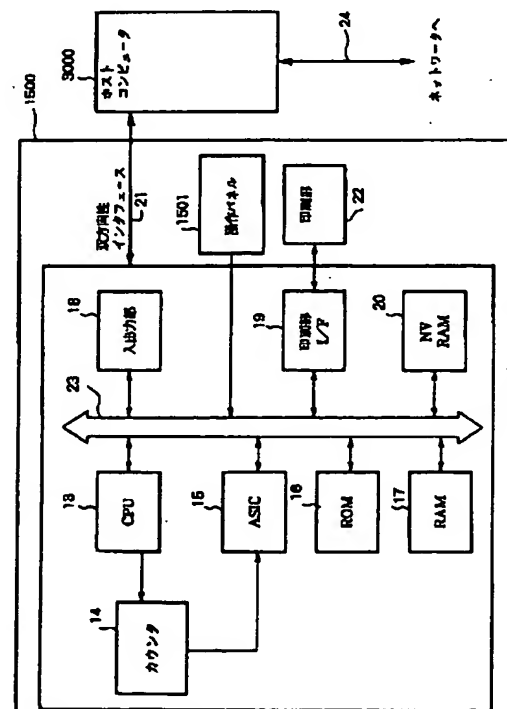
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(54)【発明の名称】 印刷装置及びそのメンテナンス方法

(57)【要約】

【目的】 ユーザを介さずに印刷装置のメンテナンス時期やメンテナンス内容をサービスマンが知ることができる印刷装置及びそのメンテナンス方法を提供する。

【構成】 操作パネル1501からプリンタ1500のメンテナンス情報を入力し、NVRAM20に記憶しておき、所定の枚数分、印刷部22が印刷したのをカウンタ14でカウントすると、ASIC15がNVRAM20に記憶されているメンテナンス情報を入出力部18から双方向性インターフェース21を介してホストコンピュータ3000に出力する。そして、ホストコンピュータ3000がネットワーク上のサービスセンターにメンテナンス情報を送信する。



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## 【特許請求の範囲】

【請求項1】 印刷装置のメンテナンス情報を記憶する記憶手段と、

前記記憶手段に記憶されたメンテナンス情報を出力するタイミングを特定する特定手段と、

前記特定手段により特定されたタイミングに従って前記記憶手段に記憶されたメンテナンス情報を出力する出力手段とを備えることを特徴とする印刷装置。

【請求項2】 前記特定手段は、印刷枚数を計数する計数手段が一定枚数に達すると、メンテナンス情報を出力するタイミングとして特定することを特徴とする請求項1記載の印刷装置。

【請求項3】 前記メンテナンス情報は、操作パネルから入力されたメンテナンスに必要な情報であることを特徴とする請求項1記載の印刷装置。

【請求項4】 前記出力手段は、ネットワークに接続されている外部機器にメンテナンス情報を出力することを特徴とする請求項1記載の印刷装置。

【請求項5】 印刷装置のメンテナンス情報を記憶し、記憶されたメンテナンス情報を出力するタイミングを特定し、特定されたタイミングに従って記憶されたメンテナンス情報を出力する各工程を有することを特徴とする印刷装置のメンテナンス方法。

【請求項6】 前記特定工程は、印刷枚数を計数する計数手段が一定枚数に達すると、メンテナンス情報を出力するタイミングとして特定することを特徴とする請求項5記載の印刷装置のメンテナンス方法。

【請求項7】 前記メンテナンス情報は、操作パネルから入力されたメンテナンスに必要な情報であることを特徴とする請求項5記載の印刷装置のメンテナンス方法。

【請求項8】 前記出力工程は、ネットワークに接続されている外部機器にメンテナンス情報を出力することを特徴とする請求項5記載の印刷装置のメンテナンス方法。

## 【発明の詳細な説明】

## 【0001】

【産業上の利用分野】本発明は、特に双方向性インターフェースを介してネットワークに接続されるプリンタ等の印刷装置及びそのメンテナンス方法に関する。

## 【0002】

【従来の技術】従来、プリンタ等の画像形成装置では、ネットワーク環境下で複数の外部機器から送られてきた印刷データを印刷することができるが、そのメンテナンスは、通常ユーザがサービスセンターに連絡してメンテナンスを依頼するか、サービスマンが定期的にユーザを訪問し、プリンタのカウンターにより印刷枚数の確認や、目測で消耗してしまった部品の交換を行なっている。

## 【0003】

【発明が解決しようとする課題】ところが、上述のメンテナンス方法では、ユーザが定期点検の依頼をサービスセンターにするか、さもなければ自ら時期を見計らってメンテナンスを電話等で依頼するか、或いはトナー切れや、内部部品の寿命がきてから修理等を依頼するしか方法がないという問題があった。

【0004】本発明は上述の課題を解決するために成されたもので、ユーザを介さずに印刷装置のメンテナンス時期やメンテナンス内容をサービスマンが知ることができる印刷装置及びそのメンテナンス方法を提供することを目的とする。

## 【0005】

【発明が解決しようとしている手段】上記目的を達成するために、本発明の印刷装置は以下に示す構成を備える。

【0006】即ち、印刷装置のメンテナンス情報を記憶する記憶手段と、前記記憶手段に記憶されたメンテナンス情報を出力するタイミングを特定する特定手段と、前記特定手段により特定されたタイミングに従って前記記憶手段に記憶されたメンテナンス情報を出力する出力手段とを備える。

【0007】また、上記目的を達成するために、本発明による印刷装置のメンテナンス方法は以下の工程を有する。

【0008】即ち、印刷装置のメンテナンス情報を記憶し、記憶されたメンテナンス情報を出力するタイミングを特定し、特定されたタイミングに従って記憶されたメンテナンス情報を出力する各工程を有する。

## 【0009】

【作用】上記構成において、印刷装置のメンテナンス情報を記憶し、記憶されたメンテナンス情報を出力するタイミングを特定し、特定されたタイミングに従って記憶されたメンテナンス情報を出力するように動作する。

## 【0010】

【実施例】以下、図面を参照しながら本発明に係る好適な一実施例を詳細に説明する。

【0011】まず説明に先立ち、本発明を適用するのに好適なレーザービームプリンタ及びインクジェットプリンタの構成について図1～図3を参照しながら説明する。

【0012】尚、以下の説明では、レーザービームプリンタ及びインクジェットプリンタを例に説明するが、本発明はこれらに限られるものではなく、他のプリント方式のプリンタでもよいことは言うまでもない。

【0013】図1は、本発明を適用可能なプリンタの構成を示す概略断面図であり、例えばレーザービームプリンタ(LBP)の場合を示す図である。

【0014】図において、1500はLBP本体であり、外部に接続されているホストコンピュータから供給される印刷情報(文字コード等)やフォーム情報或いは

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マクロ命令等を入力して記憶すると共に、それらの情報に従って対応する文字パターンやフォームパターン等を作成し、記録媒体である記録紙等に像を形成する。

【0015】1501は操作パネル部であり、操作のためのスイッチ及びLED表示器等が配置されている。1000はLBP本体1500を制御する制御ユニットである。この制御ユニット1000は、主に文字情報に対応する文字パターンのビデオ信号に変換してレーザドライバ1502に出力する。レーザドライバ1502は半導体レーザ1503から発射されるレーザ光1504をオン・オフ切り替える。レーザ光1504は回転多面鏡1505で左右方向に振られて静電ドラム1506上には文字パターンの静電潜像が形成されることになる。この静電潜像は、静電ドラム1506周囲に配設された現像ユニット1507により現像された後、記録紙に転写される。この記録紙にはカットシートが用いられ、カットシートはLBP本体1500に装着した用紙カセット1508に収納され、給紙ローラ1509及び搬送ローラ1510と搬送ローラ1511とにより、装置内に取り込まれて、静電ドラム1506に供給される。また、LBP本体1500には、図示しないカードスロットを少なくとも1個以上備え、内蔵フロントに加えオプションフロントカード、言語系の異なる制御カード（エミュレーションカード）を接続できるように構成されている。

【0016】図2は、本発明を適用可能な別のプリンタの構成を示す外観図であり、例えばインクジェット記録装置（IJRA）の場合を示す図である。

【0017】図示するように、駆動モータ5013の正逆回転に連動して、駆動力伝達ギア5011、5009を介して回転するリードスクリュウ5005螺旋溝5004に対して系合するキャリッジHCはピン（図示しない）を有し、矢印a、b方向に往復移動される。このキャリッジHCにはインクジェットキャリッジIJCが搭載されている。5002は紙押さえ板であり、キャリッジ移動方向にわたって紙をプラテン5000に対して押圧する。5007、5008はフォトカブラで、キャリッジのレバー5006がこの域で存在するかどうかを確認して、モータ5013の回転方向の切り替え等を行うためのホームポジション検知手段として機能する。5016は記録ヘッドの全面をキャップ部材5022を支持する部材、5015はこのキャップ内を吸引する吸引手段でキャップ内開口5023を介して記録ヘッドの吸引回復を行なう。5017はクリーニングブレードで、部材5019により前後方向に移動可能となる。5018は本体支持板で、上記5017、5019を支持する。5012は吸引回復の吸引を開始するためのレバーで、キャリッジと係合するカム5020の移動に伴って移動し、駆動モータから駆動力がクラッチ切り替え等の公知の伝達手段で移動制御される。

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【0018】これらのキャッピング、クリーニング、吸引回復は、キャリッジホームポジション側領域にきたときにリードスクリュウ5005の作用によってそれらの対応位置で所望の処理が行なえるように構成されているが、周知のタイミングで所望動作を行なうように構成すればよい。

【0019】図3は、図2に示したプリンタの制御構成を示す概略ブロック図である。

【0020】図において、1700はインターフェースであり、外部からの記録信号を入力する。1701はMPUであり、プリンタ全体を制御する。1702はROMであり、MPU1701が実行する制御プログラムやホスト印刷情報等を格納する。1703はDRAMであり、各種データ（上記記録信号やヘッドに供給される記録データ等）を保存しておく。1704はゲートアレイ（GA）であり、記録ヘッド1708に対する出力データの供給制御や、インターフェース1700、MPU1701、DRAM1703間のデータの転送制御も行なう。

【0021】1710は記録ヘッド1708を搬送するためのキャリアモータ、1709は記録用紙を搬送するための搬送モータ、1705は記録ヘッド1708の駆動用ヘッドドライバ、1706は搬送モータ1709の駆動用モータドライバ、そして、1707はキャリアモータ1710の駆動用モータドライバである。

【0022】以上の構成において、インターフェース1700を介して後述するホストコンピュータより入力情報が入力されると、ゲートアレイ1704とMPU1701との間で入力情報がプリント用の出力情報に変換され、モータドライバ1706及び1707が駆動されると共に、ヘッドドライバ1705に送られてきた出力情報に従って記録ヘッド1708が駆動され、印字が実行される。

【0023】尚、MPU1701はインターフェース1700を介して後述するホストコンピュータとの通信処理が可能であり、DRAM1703に関するメモリ情報及び資源データ等やROM1702内のホスト印刷情報をホストコンピュータに通信可能に構成され、ネットワーク上のどの機器にも通信可能に構成されている。

【0024】図4は、本実施例を示すプリンタ制御システムの構成を示す概略ブロック図である。ここでは、レーザビームプリンタ（図1）を例に説明する。尚、本発明の機能が実行されるのであれば、単体の機器であっても、複数の機器からなるシステムであっても、LAN等のネットワークを介して処理が行なわれるシステムであっても本発明を適用できることは言うまでもない。

【0025】図において、3000はホストコンピュータであり、ROM3のプログラム用ROMに記憶されている文書処理プログラム等に基づいて図形、イメージ、文字、表等が混在した文書処理するCPU1を備え、



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システムデバイス12に接続されている複数のデバイスをCPU1が統括的に制御する。また、このROM3のプログラム用ROMにはCPU1の制御プログラム等が記憶され、ROM3のフォント用ROMには文書処理の際に使用するフォントデータ等が記憶され、更にROM3のデータ用ROMには上記文書処理等を行う際に使用する各種データが記憶されている。

【0026】2はRAMであり、ホストコンピュータ3000の主メモリ、CPU1が使用するワークエリア等として機能する。4はネットワークコントローラであり、所定の双方向性インターフェース(I/F)24を介してネットワークとの通信を制御する。5はキーボードコントローラ(KBC)であり、キーボード(KB)9や不図示のポインティングデバイスからの入力を制御する。6はCRTコントローラ(CRTC)であり、CRTディスプレイ(CRT)10の表示を制御する。7はディスクコントローラ(DKC)であり、ブートプログラム、種々のアプリケーション、フォントデータ、ユーザファイル、編集ファイル等を記憶するハードディスク(HD)、又はフロッピディスク(FD)等の外部メモリ11とのアクセスを制御する。8はプリンタコントローラ(PRTC)であり、所定の双方向性インターフェース(I/F)21を介してプリンタ1500に接続され、プリンタ1500との通信制御処理を実行する。

【0027】また、CPU1は、例えばRAM2上に設定された表示情報RAMへのアウトラインフォントの展開処理を実行し、CRT10上でのWYSIWYGを可能にしている。更に、CPU1は、CRT10上の不図示のマウ斯卡ーソル等で指示されたコマンドに基づいて登録されている種々のウィンドウを開き、種々のデータ処理を実行する。

【0028】図5は、本実施例におけるプリンタ1500の制御構成を示す概略ブロック図である。

【0029】図において、13はCPUであり、ROM16に記憶された制御プログラム等に基づいてシステムバス23に接続されている各種デバイスとのアクセスを統括的に制御し、印刷部インターフェース19を介して接続される印刷部22に出力情報としての画像信号を出力する。また、このROM16にはCPU13の制御プログラム等を記憶しているプログラムROMだけでなく、出力情報を生成する際に使用するフォントデータ等を記憶しているフォント用ROMも含む。CPU13は入出力部18を介してネットワーク上の外部機器と通信処理が可能に構成されており、プリンタ内の情報等をホストコンピュータ3000等に通知可能に構成されている。17はCPU12の主メモリ、ワークエリア等として機能するRAMで、図示しない増設ポートに接続されるオプションRAMによりメモリの容量を拡張することができるように構成されている。また、RAM17は、出力情報展開領域、環境データ格納領域等にも用いられ

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る。

【0030】1501は前述した操作パネルであり、操作のためのスイッチ及びLED表示器等が配置されている。この操作パネル1501からはプリンタのID-No.、ユーザ名、住所、機種名、出力先機器等メンテナンスに必要な情報を入力することができる。この入力データはNVRAM20に記憶される。カウンタ14は印刷した枚数をカウントするもので、CPU13からの印刷命令によりカウントアップを行なう。ASIC15はカウンタ14のカウント値が一定枚数に達すると、メンテナンス情報データをNVRAM20から入出力部18を介して双方向インターフェース21を通してネットワーク上のホストコンピュータ3000に送信する。一方、そのメンテナンス情報を受信したホストコンピュータ3000は受信したメンテナンス情報データを出力データとして双方向インターフェース24を通して自動的にネットワーク上の図示しない指定されたプリンタに送信し出力する。

【0031】次に、本実施例における印刷装置がメンテナンス情報を定期的に自動送信する処理を図6に示すフローチャートに従って以下に説明する。

【0032】まず、ステップS1において、操作パネル1501から前述したメンテナンス情報を入力すると共に、NVRAM20にそのデータを記憶する。次のステップS2において、プリンタ1500が1枚印刷作業を行なうと、続くステップS3において、カウンタ14のカウント値“C”をカウントアップする。

【0033】次に、ステップS4において、カウント値“C”が一定枚数に達したかどうかを検証し、一定枚数に達していなければステップS2に戻り、上述の印刷処理を繰り返す。また、ステップS4において、一定枚数に達していればステップS5に進み、カウンタ14を“0”クリアすると共に、メンテナンス情報を入出力部18から双方向性インターフェース21を介してホストコンピュータ3000に出力する。

【0034】このように構成されたプリンタ制御システムにおいて、プリンタの内部状態を示すメンテナンス情報を格納するメモリ、印刷枚数カウンタ等を具備して、その内部情報データをインターフェースを介して外部機器に出力できるような構成になっている。

【0035】尚、本発明は、複数の機器から構成されるシステムに適用しても、1つの機器から成る装置に適用しても良い。また、システム或いは装置にプログラムを供給することによって達成される場合にも適用できることはいふまでもない。

【0036】

【発明の効果】以上説明したように、本発明によれば、ネットワーク環境下における印刷装置が、指定の印刷装置や制御装置等に自動的にメンテナンス情報を送信することにより、ユーザを介さずにサービスセンターでその

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印刷装置のメンテナンス時期やメンテナンス内容を知ることができる。

【0037】

【図面の簡単な説明】

【図1】本実施例におけるレーザビームプリンタの構造を示す断面図である。

【図2】本実施例におけるインクジェットプリンタの構成を示す外観図である。

【図3】図2に示したプリンタの制御構成を示す概略ブロック図である。

【図4】ホストコンピュータの構成を示す概略ブロック図である。

【図5】図1に示したプリンタの制御構成を示す概略ブロック図である。

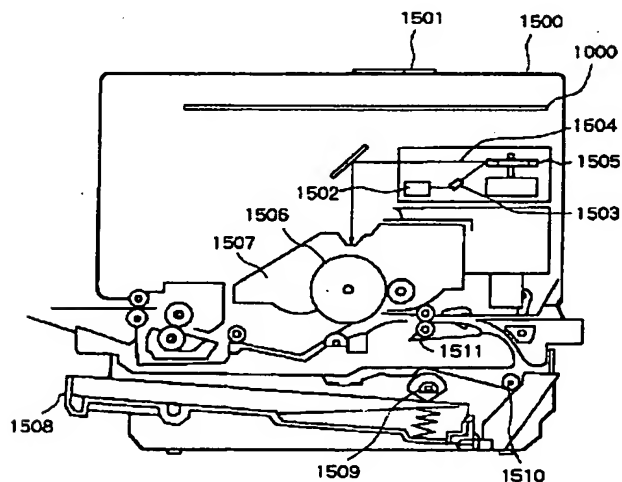
【図6】本実施例におけるメンテナンス情報送信処理を示すフローチャートである。

【符号の説明】

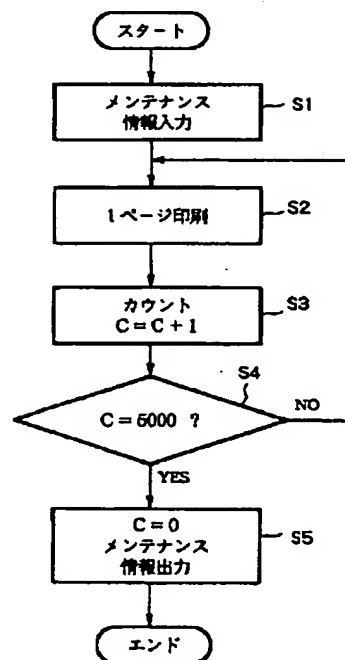
- 1 CPU
- 2 RAM
- 3 ROM
- 4 ネットワークコントローラ
- 5 キーボードコントローラ

- 6 CRTコントローラ
- 7 ディスクコントローラ
- 8 プリンタコントローラ
- 9 キーボード
- 10 CRT
- 11 外部メモリ
- 12 システムバス
- 13 CPU
- 14 カウンタ
- 15 ASIC
- 16 ROM
- 17 RAM
- 18 入出力部
- 19 印刷部 I/F
- 20 NVRAM
- 21 双方向性インターフェース
- 22 印刷部
- 23 システムバス
- 24 双方向性インターフェース
- 20 1500 プリンタ
- 1501 操作パネル
- 3000 ホストコンピュータ

【図1】

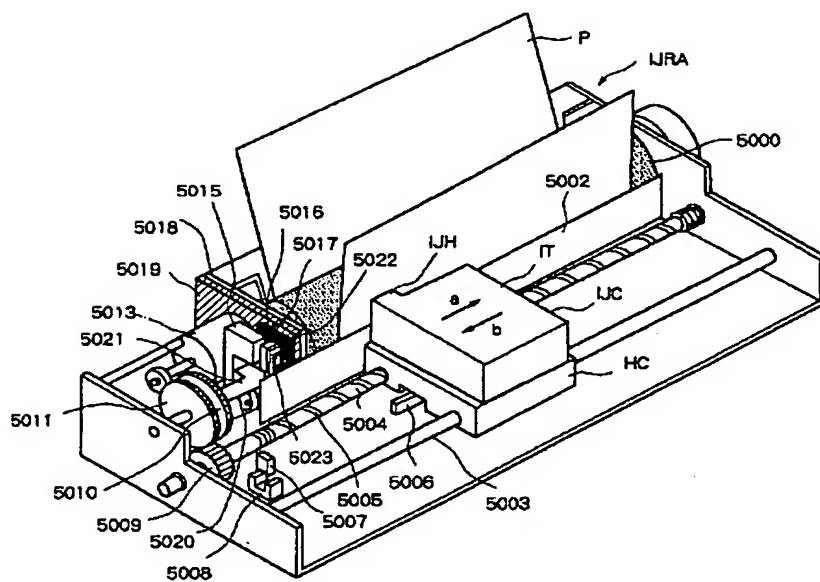


【図6】

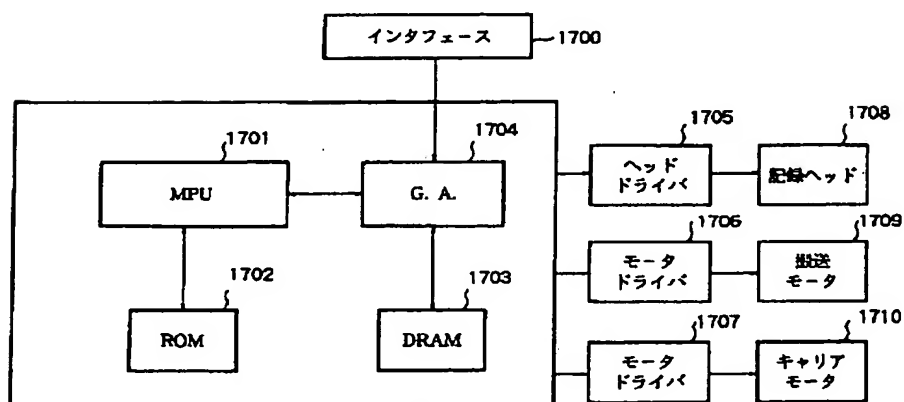


(6)

【図2】

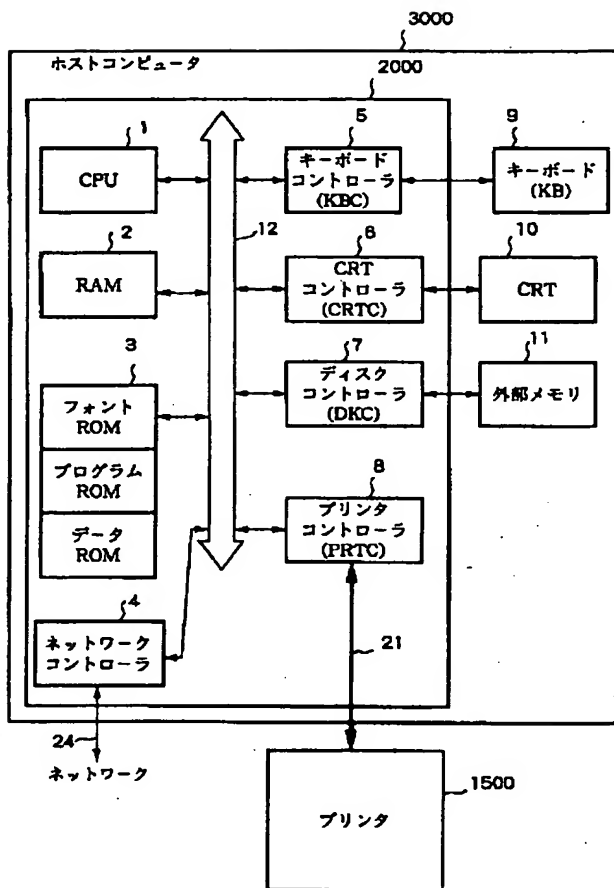


【図 3】



(7)

【図4】



【図5】

